AMENDMENTS TO THE CLAIMS:

Complete Listing of Claims

1. (currently amended) A single-inductor dual-output buck converter comprising:

a power source that supplies DC power for conversion by the converter by reducing the voltage thereof;

a first output that selectively obtains power from the power source through an inductor and provides a first output voltage and a first output current according to a first duty cycle; ~~and~~

a second output that selectively obtains power from the power source through the inductor and provides a second output voltage and a second output current according to a second duty cycle; and

a re-circulation switch that re-circulates inductor current to the power source during non-duty cycle periods.

2. (canceled)

3. (currently amended) The converter of claim 1, further comprising a second ~~first~~ switch that controllably connects the power source to the inductor.

4. (currently amended) The converter of claim 3, further comprising a third ~~second~~ switch that controllably connects the first output to the inductor.

5. (currently amended) The converter of claim 4, further comprising a fourth ~~third~~ switch that controllably connects the second output to the inductor.

6. (original) The converter of claim 1, wherein the power source is a battery.

7. (original) The converter of claim 1, wherein the first output comprises a first capacitor and a first load.

8. (original) The converter of claim 7, wherein the second output comprises a second capacitor and a second load.

9. (original) The converter of claim 1, further comprising a controller that operates the converter in a first stage that provides power to the first output, a second stage that re-circulates current to the power source, a third stage that provides power to the second output, and a fourth stage that re-circulates current to the power source.

10. (original) The converter of claim 1, wherein the controller further operates at a fixed frequency and controls the first duty cycle by a period of time spent in the first stage and controls the second duty cycle by a period of time spend in the third stage.

11. (original) The converter of claim 1, wherein the power supply produces a voltage of about 5.4 V, the first output produces a voltage of about 1.8 V and a current of about 200 mA, and the second output produces a voltage of about 1.2 V and a current of about 600 mA.

12. (original) A single-inductor dual-output buck converter comprising:

a power source having a positive terminal and a negative terminal, wherein the negative terminal is connected to ground;

a first switch having a first terminal and a second terminal, wherein the first terminal is connected to the positive terminal of the power source;

an inductor having a first terminal and a second terminal, wherein the first terminal is connected to the second terminal of the first switch;

a second switch having a first terminal and a second terminal, wherein the first terminal is connected to the second terminal of the inductor;

a third switch having a first terminal and a second terminal, wherein the first terminal is connected to the second terminal of the inductor;

a first output connected to ground and the second terminal of the second switch; and

a second output connected to ground and the second terminal of the third switch.

13. (original) The converter of claim 12, wherein the first output comprises a first load and a first capacitor, the first load having a positive terminal connected to the second terminal of the second switch and a negative terminal connected to ground, the first capacitor having a positive terminal connected to the second terminal of the second switch and a negative terminal connected to ground.

14. (original) The converter of claim 12, wherein the second output comprises a second load and a second capacitor, the second load having a positive terminal connected to the second terminal of the third switch and a negative terminal connected to ground, the second capacitor having a positive terminal connected to the second terminal of the third switch and a negative terminal connected to ground.

15. (original) The converter of claim 12, wherein the first switch is turned ON during a first and a third stage of operation, the second switch is turned ON during the first stage of operation, and the third switch is turned on during the third stage of operation.

16. (original) The converter of claim 12, further comprising a fourth switch and a fifth switch that operate to re-circulate current to the power source during a second and fourth stage of operation.

17. (original) A method of operating a single-inductor dual-output buck converter comprising:

entering a first stage of operation that provides power from a battery through an inductor to a first output for a first period of time;

entering a second stage of operation that re-circulates inductor current to at least partially recharge the battery for a second period of time;

entering a third stage of operation that provides power from the battery through the inductor to a second output for a third period of time; and

entering a fourth stage of operation that re-circulates inductor current to at least partially recharge the battery for a fourth period of time.

18. (original) The method of claim 17, wherein the method is performed in order and operates at a fixed frequency.

19. (original) The method of claim 17, wherein the first period of time is selected according to a first duty cycle and the second period of time is selected according to a second duty cycle.

20. (original) The method of claim 19, further comprising determining the first duty cycle according to a first output voltage and a first output current.

21. (original) The method of claim 20, further comprising determining the second duty cycle according to a second output voltage and a second output current.

22. (original) The method of claim 21, wherein the second duty cycle is determined to be about 30% and the first duty cycle is determined to be about 30%.

23. (original) The method of claim 21, wherein the second duty cycle is determined to be about 60% and the first duty cycle is determined to be about 5%.

24. (original) The method of claim 17, further comprising adjusting the first time period and the third time period according to modified output requirements.